GEOGRAPHIC NEWS BULLETINS

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THE NATIONAL GEOGRAPHIC SOCIETY

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Contents for Week of November 29, 1937. Vol. XVI. No. 21.

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Brazil Sets Up First Corporate State in New World

BRAZIL, which spreads over more territory than does the United States, exclusive of Alaska, has set up the first Corporate State form of government in the New World. While the exact nature of the régime was not made clear when President Vargas dissolved the legislative bodies of both Federal and State governments on November 10, news dispatches that have filtered through the censors indicate that Brazil's new government will be modeled somewhat after the strongly centrallized government of Portugal.

As one of the powerful ABC (Argentina-Brazil-Chile) group of South American nations, Brazil plays a rôle in the economic and political life of the continent that is in keeping with its enormous size. A glance at the map reveals that Brazil occupies the whole northeast shoulder as well as the heart of the continent. Nearly all the remaining South American countries could fit within its borders.

Compared to the United States in area, all the 48 States could be comfortably transposed within Brazilian boundaries, and then there would be nearly room enough for another Texas. The entire continent of Australia lacks about 300,000 square miles of equaling South America's biggest nation.

Much of Brazil Unknown Even to Brazilians

In spite of its vast bulk and economic wealth, Brazil is little known even to most Brazilians. Much of its area is blanketed under dense tropical forests, for Brazil has more trees than any other nation in the world. Large areas are unknown to white men, and many of the Indian tribesmen of remote inland regions are totally unaware of government activities in Rio de Janeiro, the capital.

Few outsiders realize that Brazil, like the United States and like Mexico, is a federated nation made up of strong States which have retained many rights and privileges. Brazil has 20, and a Federal District, like our District of Columbia, around the capital. It also has laid out another Federal District for future use in the State of Goyaz, far inland. Three Brazilian States are larger than Texas, and a fourth is nearly equal in size to the Lone Star State. Along the Atlantic coast lie the country's smaller, more thickly populated States that more nearly resemble the commonwealths of the United States.

The smallest Brazilian State, however, is more than six and a half times larger than Rhode Island. Beyond the coastal zones the states seem to spread boundlessly. They are known to be rich in minerals, but development of resources in the deep forests is still in its infancy.

Luxuriant Equatorial Forests

The Western Hemisphere's largest tropical area is within Brazil, which covers a greater segment of the Equator than any other country in the world. In the Amazon River, it contains the world's greatest river. Its eastern coastline bulges into the Atlantic so far that its tip is nearly in the same latitude as the Azores Islands, more than half way across the Atlantic between New York and Lisbon.

Despite Brazil's unexploited interior, the country holds an enviable commercial position in South America. It is the world's greatest source of coffee, from an adopted plant whose origin was Ethiopia.

Rubber trees are indigenous to Brazil. The great plantations of the east were started with cuttings stolen from Brazil. Brazilians continued to collect rubber in crude fashion from wild trees in her forests while the eastern plantation owners

Photograph by Albert W. Stevens

DROWNING MOUNTAINS KEEP THEIR HEADS ABOVE WATER IN RIO'S BAY

Sharp peaks, especially the well-named Sugar Loaf, give a unique ruggedness to the bay around which is growing Brazil's capital city, Rio do Janeiro. The site was named "River of January" for a river which doesn't exist; explorers thought a large river *ought* to empty into the big bay. Among the mountains crouched around the city is Corcovado, "Hunchback Mountain," (left foreground) where now construction has been completed of a gigantic statue of Christ over 100 feet high (Bulletin No. 1).

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Shansi, Coal and Iron Bin of North China

CAPTURE of Taiyuan, capital of Shansi Province, has given Japan control of much of this huge northern Chinese State, one of the richest in the Republic. The ancient walled city put up a stout resistance until Japanese gunners made breaches in the walls with heavy artillery.

Three other provincial capitals—those of Hopeh, Chahar, and Suiyuan—have already fallen to the Nipponese troops in four months of fighting in north China. Recent dispatches state that Japanese forces are also threatening Tsinan, capital of the fifth big north China State—Shantung.

Has Several Important Rail Lines

Shansi is a real prize for the Japanese because the province is one of the great coal bins of China. Its coal fields, in fact, are among the most valuable in the Far East.

Iron ore deposits of the province also are said to be vast, with an estimated three million tons that await the miners' pick or steam shovel.

The town of Tatung, captured by the Japanese in September, is noted for its coal and soda mines, as an important trading center, and as a strategic railroad junction in north Shansi. A railroad may soon link Tatung with the capital, Taiyuan (Yangku) in central Shansi, from which a line already continues to Puchow on the southern border, and another branch runs east to connect with the Peiping-Hankow railroad at Chengting.

Shansi is separated from Inner Mongolia on the northwest by a section of the Great Wall, here only a crumbling ridge five feet high built of clay, instead of the stone or brick construction of other sections (illustration, next page).

Cereals Raised on Terraced Farms

Along the western boundary of the province flows the mighty Hwang Ho (Yellow River). Its tributary, the Fen Ho, winds for more than three hundred miles through the center of Shansi. In the river valleys cotton and mulberry trees thrive, and rice is extensively cultivated when water is high enough to allow flooding of the fields.

The province is rugged and mountainous. Peaks soar to 8,000 feet. Mountains in the west are still thickly covered with timber, but elsewhere they have been deforested and are barren for the most part and deeply eroded.

Stretched bleakly between the peaks here and there in the province, there are plateaus 3,000 to 5,000 feet high, streaked with deep fissures and covered with yellow wind-driven soil.

In windy weather the air on the plateaus is thick with yellow dust. By terracing the earth and raising cereals that can thrive on little moisture, hard-working Chinese farmers in this region manage to eke out a living.

Neighbor Province Has Similar Name

Shansi's more than 12,000,000 inhabitants mainly are farmers in the southeastern part of the province, or in fertile river basins in the central region.

In recent years, under good administration, Shansi had developed into a model province which sent leaders to all parts of China. Education is compulsory, good

scientifically developed their trees. When the eastern plantations began to produce, Brazil's position in the rubber world began to toboggan. There is now, however, a concerted effort in Brazil again to regain its former position as a rubber producer through the plantation system. Cotton, sugar, and cacao also are commodities that more and more are becoming prominent in Brazil's commercial life.

Portuguese has been the language of the country since the first colonies were set up after Cabral, Portuguese explorer, discovered it in 1500. In 1815 the colony became a kingdom, and in 1889, a republic as a result of a revolution.

It is estimated that 46,000,000 people live in Brazil, two-thirds of whom are native born. Residents of Italian blood number more than a half-million, and there are nearly as many Portuguese. There also are about 219,000 Spaniards, 53,000 Germans, and half as many Japanese. The United States is represented by about 3,500 inhabitants.

The large cities are in the coastal states, with the exception of Manaos (84,000), which lies on the banks of the Amazon 800 miles inland. Rio de Janeiro has a population of nearly two million, and there are nine other cities with more than 100,000.

Note: Background material about Brazil may be found in the photographs and text of the following articles: "Bonds Between the Americas," *National Geographic Magazine*, December, 1937; "Journey by Jungle Rivers to the Home of the Cock-of-the-Rock," November, 1933; "In Humboldt's Wake," November, 1931; "Gigantic Brazil and Its Glittering Capital," December, 1930; "Through Brazil to the Summit of Mount Roraima," November, 1930; "By Seaplane to Six Continents," September, 1928; "How Latin America Looks from the Air," October, 1927; "Sindbads of Science," July, 1927; "Exploring the Valley of the Amazon in a Hydroplane," April, 1926; and "Rio de Janeiro, in the Land of the Lure," September, 1920.

A new wall map of South America has been issued as a supplement to the December, 1937, issue of *The Geographic*.

Bulletin No. 1, November 29, 1937.

Photograph by T. D. Carter

BACKWOODS CITIZENS OF AMERICA'S FIRST CORPORATE STATE

Brazil's government faces the problem of ruling the largest number of primitive Indian tribes to be found in any American country. Many of them cannot read or write, and therefore cannot understand modern political ideas. These girls of northern Brazil are showing how they can lend a hand in home-making. Mud and straw are packed against a wooden framework of a new house. In the hot tropical sun the mud soon dries into an adobe wall.

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Indians Introduced Nuts to American Festive Board

WHERE do Brazil nuts come from? An exhibit now current just outside New York indicates two things: that the nuts are gathered in the Brazilian jungles along the Amazon, and that most shipments reach the United States via New York. The exhibit, in addition to photographs, includes samples of the dugout canoes and hand-hewn paddles with which the natives bring their nut harvest to loading stations on the Amazon.

Spears, bows, arrows, and blowguns for poisoned darts explain why Brazil-nutting is a dangerous occupation. The exhibit of pods, each an oversize "fruit" of a jungle tree containing from fourteen to twenty-eight "seeds" or nuts, indicates how tight packing gives the Brazil nut its distinctive shape (illustration, page 1).

At the same time, news items answer the question, "Where do English walnuts come from?" Apparently most of them now come from the west coast of the United States. Reports of this year's crop show an unusually large yield in California, Washington, and Oregon. Walnuts are also imported from China and France.

Indians Planted Hickory Groves

Native American, however, are most of the nuts which have filled the American dinner table bowl since colonial times. Nuts, as well as corn and game, were Indian contributions to the diet of early white settlers.

Indians of North America have long known the food value of nuts. The Indian in the rôle of orchardist seems unfamiliar, yet he found so many uses for hickory nuts alone that he cultivated hickory groves. He not only ate the nuts, but drank hickory "milk," made by pouring water over pulverized nuts or the ground press cake. He used the latter in cooking hominy and corn cakes, and as gravy on sweet potatoes.

Pecans, which have been growing wild for centuries in moist lowlands of the southern United States and Mexico, were also favorites with American Indians. Later pecans furnished nourishment for early Mississippi settlers and were one of their first articles of American commerce (illustration, next page).

Murmuring pines in the Southwest and in Mexico still provide Indians and Mexicans with edible nuts. Long before cowled Spanish monks marched up the western coast, establishing their missions, Indians depended for food partly on nuts of the scrubby piñon tree of Arizona and New Mexico. Paiute and Washo tribes of western Nevada once fought long bloody battles over piñon nuts. Hatchets were not buried until the territory was definitely divided to give each a share of piñon woods.

Bread Made from Chestnut Flour

The expression "from soup to nuts" implies that nuts are now merely dainties to top a feast, whereas to many people they are the feast itself. Nuts are one of the richest foods grown. Many inhabitants of India and Japan substitute nuts and vegetables entirely for meats. Because of their high fat content, nuts are used interchangeably with other fatty foods such as cream, butter, or bacon.

The chestnut-bark disease, which since 1904 has destroyed most of the native chestnut trees in the eastern United States, has greatly limited young America's acquaintance with these nuts. Few of the present generation in the United States

roads have been built, and thousands of young trees have been planted to reforest the hills and help regulate the water supply.

This important northern province has an area of 81,853 square miles, which is about equal to that of the State of Kansas.

Shansi should not be confused with similarly named Shensi Province, its neighbor to the southwest.

Note: For other articles about China see "Landscaped Kwangsi, China's Pictorial Province," *National Geographic Magazine*, December, 1937; "Changing Shanghai" and "Peacetime Plant Hunting Around Peiping," October, 1937; "Grand Canal Panorama," April, 1937; "Approach to Peiping," February, 1936; "Coastal Cities of China," November, 1934; "Glory That Was Imperial Peking," June, 1933; "From the Mediterranean to the Yellow Sea by Motor," November, 1932; "Cosmopolitan Shanghai, Key Seaport of China" and "Macao, Land of Sweet Sadness," September, 1932; "Raft Life on the Hwang Ho," June, 1932; "How Half the World Works," April, 1932; "Glories of the Minya Konka," October, 1930; "Seeking the Mountains of Mystery," February, 1930; "Life Among the Lamas of Choni," November, 1928; "Ho for the Soochow Ho," "The Geography of China," "Life Afloat in China," and "New China and the Printed Page," June, 1927; and "Farmers Since the Days of Noah," April, 1927.

Bulletin No. 2, November 29, 1937.

Photograph by R. E. Baber

IN SHANSI THE GREAT WALL IS ALMOST A MEMORY

Most of China's Long Rampart was built of stout masonry or bricks, but along the northern border of Shansi it was made of clay, without battlements. Nature has taken its toll, and today it is often no more than a ridge of stones and clay, broken by crumbling towers. In places it is easier to trace the Wall's course from an airplane than from the ground.

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Westminster Abbey Resumes Its Lure for Sightseers

LONDON'S leading church of kings and poets, pageants and solemn ceremony, is again open for public worship and tourist inspection. Westminster Abbey, for the past eighteen months, has interrupted its stream of sightseers with preparations for the called-off coronation of Edward VIII, for the coronation last May of George VI, and afterwards for removal of special galleries built for the latter event.

The re-opened Abbey shows the results of its house cleaning. Sunlight brightens its aisles through stained glass windows that sparkle from recent washing. Royal effigies have been scrubbed, and begrimed marble columns scoured and polished.

Other great English churches may be larger, older, or more impressively situated, but Westminster Abbey is the most revered, holding a unique position as the church in which the English monarchs are crowned. Since the first coronation in the existing abbey, that of Edward I in 1274, all English sovereigns have been invested with their sovereignty there.

Royal Weddings and Funerals in Abbey

Among the British kings and queens who were crowned under this same roof, were Richard III, entering the Abbey barefooted as a sign of humility; the boy king Edward VI, for whom the tedious ceremony was shortened; James II, from whose head the crown almost toppled; George IV, hot in his heavy robes and wiping his face with handkerchiefs; young Queen Victoria.

Not only coronations, but also royal weddings have filled Westminster Abbey with splendid pageantry. George VI, then Duke of York, was married there on April 26, 1923.

In contrast to such festive occasions are solemn times when the hushed Abbey is draped in black for funerals of royalty or of noted Britons. Until the middle of the 18th century, the Abbey was the favorite burial place of English monarchs, and contains many of their gilded or elaborately carved marble tombs. Even little Edward V, one of the princes murdered in the Tower, has his remains preserved here, thus achieving a resting place in the Abbey, although he was cheated out of a coronation beneath its lofty Gothic arches.

Once Part of a Benedictine Monastery

In a small room above Abbot Islip's Chapel stand a number of lifelike wax effigies of British royalty. Some of these are copies of leather, or wood and canvas, effigies which were dressed in the dead monarchs' clothes and displayed on their coffins.

Among the wax figures is that of the beautiful Frances, Duchess of Richmond, who was the model for Britannia on Britain's coinage. In the case with her effigy is perched a stuffed gray parrot, her pet for forty years.

Westminster Abbey is so called because it originated as the church of a Benedictine abbey, or monastery. For centuries, abbots and monks thronged its cloisters, refectory, and dormitory, which now are incorporated in adjoining Westminster School. Beneath the building that was the monks' chapter house is an 11th-century crypt whose stout pillars and round arches still show the Norman

have seen the large spiny burrs with their velvety linings; they may recognize the glossy, bright brown nuts only as stuffing in Thanksgiving turkeys or as tasty morsels bought from street venders on frosty mornings.

But in other parts of the world, chestnuts are a valued food. In some Japanese mountain regions they almost usurp the potato's place. In France, where chestnut trees grow thickly, these large nutritious nuts are prized as vegetables in the humblest cottage and in the finest château. Dawn sees gray streets dotted with venders carrying pails of hot steamed chestnuts. Working people flock to them for their breakfast. Others munch sweet heavy flat cakes, something like oat cakes, made from chestnut flour. In one kind of chestnut bread the holes are as large as in Swiss cheese.

In much of southern Europe, chestnuts form the chief winter diet of poor people, who often make two meals a day from them. The nuts are served in a number of ways—steamed and eaten with salt or milk, roasted, or made into stews, puddings, and bread. Europeans also eat large quantities of almonds, walnuts, hazelnuts fried in oil, and pickles made from immature walnuts. California growers annually export many tons of green English walnuts, largely to England, to be pickled.

Note: Additional photographs of nuts and nut trees of various kinds are contained in "Approach to Peiping," *National Geographic Magazine*, February, 1936; "Southern California at Work," November, 1934; "Gigantic Brazil and Its Glittering Capital," December, 1930; "Among the Hill Tribes of Sumatra," February, 1930; "Virginia—A Commonwealth That Has Come Back," April, 1929; "Unspoiled Cyprus," July, 1928; "The Balearics, Island Sisters of the Mediterranean," August, 1928; "So Big Texas," June, 1928; "Farmers Since the Days of Noah," April, 1927; "Marching Through Georgia Sixty Years After," September, 1926; "The Amazon, Father of Waters," April, 1926; and "From Granada to Gibraltar," August, 1924.

Bulletin No. 3, November 29, 1937.

Photograph by Clifton Adams

MACHINES GRADE PAPER SHELL PECANS AT ALBANY, GEORGIA

Spanish and French explorers found this tasty nut growing wild in many parts of southern United States and in Mexico. As early as the 1760's fur traders carried pecans with their beaver skins to New York, where some of them were shipped to England and France.

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Alexander Graham Bell's Milepost in the Progress of Sound-Recording

A MECHANICAL Rip van Winkle has just been brought out of a 56-year nap in the secret archives of the Smithsonian Institution of Washington, D. C. It is a "missing link" talking machine, deposited there for safe-keeping by Alexander Graham Bell in 1881. By contrast, it emphasizes the progress of modern sound-recording, to which it gave a big grandfatherly boost. Fortunately, considering its strange appearance, it could speak for itself.

"I am a graphophone," squeaked the aged mechanism, "and my mother was a phonograph." It has a vocabulary of some thirty words, and it uses the needle-in-a-groove principle which has endowed phonograph records with voice ever since. Aside from these features, it no more resembles the victrola of today than does the "one-lung" automobile of 1900 resemble today's streamlined coupe! It is a a small brass cylinder about the size of a coffee can, revolved by hand, mounted with a mouthpiece for recording sound on the cylinder, and an earpiece on a yard of rubber tubing for hearing the sound reproduced (illustration, next page).

Experiment with Wax Had Tremendous Consequences

But this skeleton graphophone had one proud feature which no working model had ever used before: wax for receiving sound records. The presence of wax in the cylinder's grooved sound-track changed the talking machine of a half-century ago from a scientific plaything to a practical musical instrument and finally to a great industry.

Direct descendant of this model is the large dictaphone business, which uses wax records as mechanical stenographers. A great-nephew of the little old graphophone is the talking movie, which started out using phonograph records synchronized with pictures. Even the more up-to-date sound-track on the movie film bears a remote resemblance to the graphophone's younger brother, a patented model by the same inventors which first reeled a sound-track—then made of paraffine paper—on flywheels.

Yet, when Dr. Bell deposited this graphophonic forefather in the Smithsonian vault in 1881, the idea of a talking machine inspired the same incredulous awe among scientists that it arouses today among backward natives of mid-Africa. Only four years earlier Edison had made a crude sketch and directed his chief mechanic Kreusi to construct the first machine to record and reproduce "talking." When the working model recorded scratches on tinfoil, then repeated word for word Edison's version of "Mary had a little lamb," even the Menlo Park laboratory was startled out of its calm acceptance of "the old man's" genius. French scientists accused the demonstrator of this talking machine of duping them by ventriloquism.

Tinfoil Restricted Talking Machine's Use

But fragile tinfoil kept Edison's talking phonograph a mere hand-cranked novelty. Edison turned to experiments with kindling fire on tiny wires in a glass bulb.

The talking machine idea, however, fired the interest of a young Scotsman in Washington, D. C., who never wearied of wrestling with any apparatus to catch, carry, or reproduce sound —Alexander Graham Bell. When the French government awarded him the Volta prize of 50,000 francs for his newly invented "electric-speaking telephone," he founded the Volta Laboratory in Washington. There he, his cousin Chichester Bell, and their friend Sumner Tainter all went to work on sound devices. Here they developed the first wax recording, and the talking machine started on its way to business success.

Whatever Alexander Bell contributed to this history-making use of wax, he allowed all credit to go to his brother inventors. In 1886, Tainter and Chichester Bell patented a little mechanism of shiny brass rods and black mountings, similar to Edison's phonograph but called a graphophone. It "graphed" its phonic record on a paper cylinder coated with pale orange wax, looking less like a record than like a fat candle. The wax was probably beeswax combined with paraffine.

The early experimental model which Dr. Bell had entrusted to the Smithsonian five years earlier, and which has just been unearthed, was not patented. Its purpose was to prove his associates as early birds with the wax idea if their patent should be disputed. In practically no time at all, the Bell and Tainter word "Graphophone" was being emblazoned in gold scrolls across small oak cabinets. One model did away with hand-cranking by substituting a sewing machine treadle.

Meanwhile, the wax-on-paper records had recaptured the interest of Edison, and by 1888 he had developed an all-wax cylindrical record for his "Spectacle" phonograph. According to

type of architecture employed in the church which preceded the present edifice. The latter was erected chiefly by Henry III.

For a brief time during the Reformation, the Abbey was made a cathedral. Mass-books and stone altars were destroyed, monks were made canons, the abbot —a dean, and a bishop was appointed. Today there is a dean, but neither monks nor bishop.

Note: Pictures of Westminster Abbey, some of them in color, and accounts of visits to and ceremonies in the venerable structure occur in the following articles of the *National Geographic Magazine*: "Along England's Coronation Route," May, 1937; "As London Toils and Spins," January, 1937; "Great Britain on Parade," August, 1935; "Flags of the World," September, 1934; "London From a Bus Top," May, 1926; "Looking Down on Europe," March, 1925; and "Cathedrals of the Old and New World," July, 1922.

Bulletin No. 4, November 29, 1937.

THE CHAIR THAT PERIODICALLY UPSETS WESTMINSTER ABBEY'S CALM

To unknowing eyes it is a plain battered oak throne with a curious large stone under the seat. To loyal Britons it glows with more glory than did the gilt and decorations which originally covered it. For ever since Edward I had it constructed in 1301, it has served to seat the British monarch during the solemn coronation ceremony. The ancient stone, brought from Scotland by Edward I, is the famous Stone of Scone, on which Scottish kings had formerly been crowned. Elbows of sovereigns and sightseers have worn the velvet off the arm pads, and careless vandals have carved their initials on both chair and shield.

the thin yellow book of instructions which went to every purchaser, the cylinder was revolved by a little electric motor, and sound was delivered from wax record to listener through black knobs on rubber tubing to fit into the ears like a physician's stethoscope. Later and louder models, like the Edison Amberola, could fill a room with tin-panny band music. They were accompanied by flocks of black or blue wax cylinders in their padded cartons.

Further changes came from the efforts of another wizard of the canned-music box, Emile Berliner. He demonstrated in Philadelphia, in 1888, a talking machine without Edison's revolving cylinder or the waxy record of Bell and Tainter. His "gramophone" played zinc records on a horizontal turntable, like that in use today. This pancake style in records puzzled the public at first as much as it did the famous trademark terrier, cocking an ear at the gramophone's morning-glory-shaped trumpet and listening to "His Master's Voice." By 1894 the gramophone disks were made of hard rubber.

Only a few decades later the trail of recorded sound, first led out of a blind alley by the Bell and Tainter use of wax, led to a triumphant chorus of disk records made of modern plastic and other rubber substitutes.

Note: Dr. Bell, who was for five years President of the National Geographic Society, reported a number of his scientific investigations in the *National Geographic Magazine*: "Tetrahedral Principle in Kite Structure," June, 1903; "Our Heterogeneous System of Weights and Measures," March, 1906; "Aërial Locomotion," January, 1907; "Few Thoughts Concerning Eugenics," February, 1908; "Discovery and Invention," June, 1914; "Prizes for the Inventor: Some of the Problems Awaiting Solution," February, 1917; "Who Shall Inherit Long Life?" June, 1919; and "Prehistoric Telephone Days," March, 1922.

Dr. Bell's researches have been reported by other writers in the following articles in the *National Geographic Magazine*: "Dr. Bell's Tetrahedral Tower," October, 1907; "Dr. Bell's Man-Lifting Kite," January, 1908; "Future of the Airplane," (Dr. Bell's Support of Aviation) January, 1918; and "The Miracle of Talking by Telephone," October, 1937.

Bulletin No. 5, November 29, 1937.

Photograph from Wide World Photos

PROOF FROM THE PAST THAT "THERE ARE MORE THINGS IN HEAVEN AND EARTH THAN ARE DREAMED OF"

Hamlet's eery warning to Horatio, recorded in 1881, was heard in 1937 on this pioneer working model of a graphophone. Sealed in a box, the model had been deposited by the inventor, Alexander Graham Bell, in a vault among the secret archives of the Smithsonian Institution. When unsealed on October 27, the graphophone repeated the quotation from Hamlet's speech as well as a whimsical description of itself: "I am a graphophone and my mother was a phonograph." These were the first words ever officially recorded on wax for phonographic reproduction. Ten-year-old Alexander Graham Bell Grosvenor listens to his great-grandfather's model, holding an "earphone" at the end of the rubber tubing attached to the "talking machine." Witnesses of this historic unsealing were Dr. Charles G. Abbot (left), Secretary of the Smithsonian Institution; Mrs. Gilbert Grosvenor and Mrs. David Fairchild, daughters of Alexander Graham Bell; and Mr. T. H. Baird (right), "cranking" the cylinder on which the words were recorded.